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The Time Course of Psychological and Neurological Variables in Multiple Scleroris: Insights from a 24-month Real-world Data Collection during Escalation Therapy

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Background

Recent research[1] has highlighted the importance of cognitive symptoms in patients diagnosed with multiple sclerosis (MS). Cognitive impairment affects a huge proportion of MS patients and can significantly impact their quality of life (QoL), treatment adherence and long-term outcome. Data is scarce how patients' cognition develops over time and nearly lacking how cognition changes with MS treatment switch. However, treatment switches, such as changes from a baseline medication to 2nd and 3rd-line drugs, are is becoming increasingly frequent in MS therapy[2].

Objective

The objective of this study consisted in a longitudinal assessment of cognitive parameters in MS patients and their exploration as surrogate markers for treatment success after switching from basic to escalation therapy. Cognitive symptoms might be suitable indicators for treatment success since they represent a core deficit of the disease and appear early in the disease course. Moreover, their assessment is fast and non-invasive, and they are closely associated with clinical outcomes and QoL. Preserving cognitive abilities is therefore widely considered a main goal of successful MS treatment.

Method

Longitudinal 24-month observational study monitoring *N*=289 relapsing-remitting MS patients (recruited 03/2018 - 12/2019, M_{age} = 42, *SD* = 11, 70% female), of which *n* = 50 discontinued and *n* = 86 were lost to follow up, regarding their cognitive processing speed, fatigue and psychological profile (assessed by the symbol digit modalities test, SDMT, the fatigue scale motor and cognition, FSMC and the beck depression inventory, fast screen, BDI-fs) as surrogate markers for treatment success in patients switching from basic to 2nd and 3rd–line (escalation) therapies. Patients were assessed at 6, 12, and 24 months follow-up.

Results

From a total of 235 patients with documented treatments, 43% switched to escalation therapy and 17% continuously received escalation therapy from the start At baseline, 41% of patients achieved a total SDMT score in the normal range. The percentage of patients with normal information processing speed remained relatively stable (42%, 40% and 35%) during follow-up visits at 6, 12, and 24 months, respectively. This stability of cognitive capacities indicates that the escalation therapy is effective in keeping patients' cognitive processing speed in the norm range. The stability across the observation period also applies to other behavioral and psychological parameters, such as cognitive and motor fatigue (Figure 2) and major depression (Figure 3); likewise, patients' disability progression scores remained relatively stable (Figure 4).

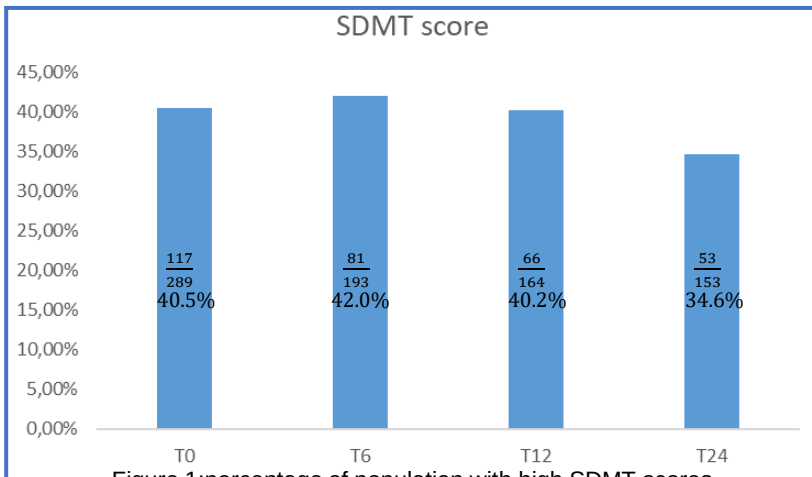

Figure 1:percentage of population with high SDMT scores at 0, 6, 12, 24 month follow up.

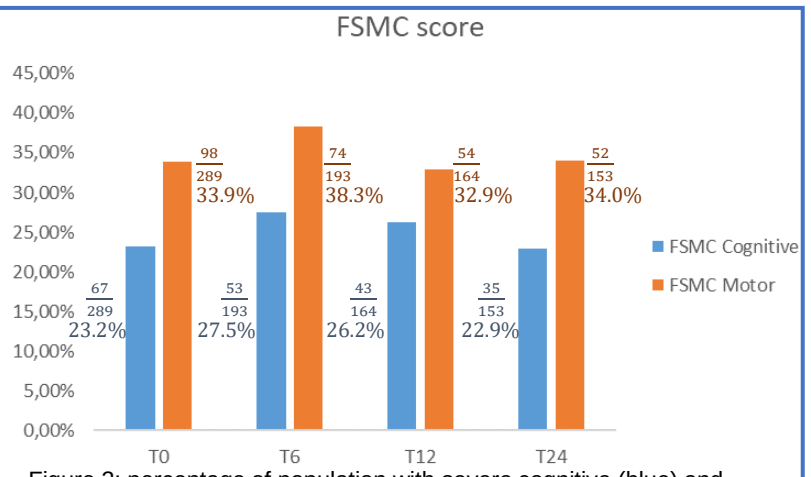

Figure 2: percentage of population with severe cognitive (blue) and motor fatigue (orange) measured by FSMC.

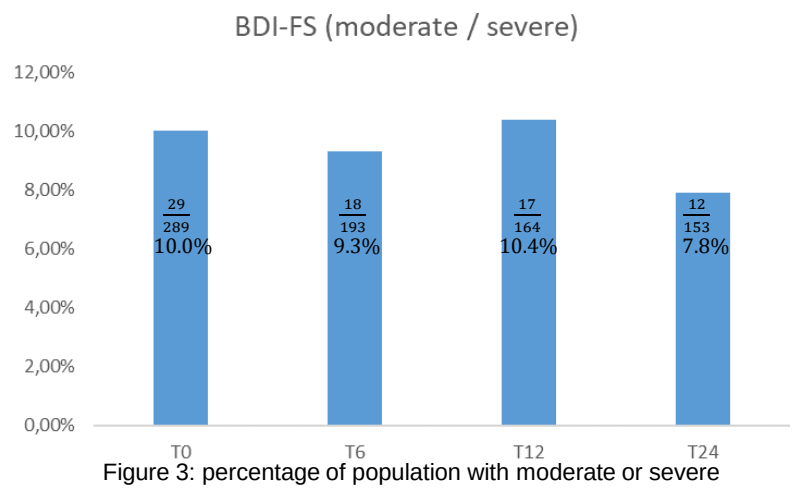

Figure 3: percentage of population with moderate or severe depression according to BDI-FS.

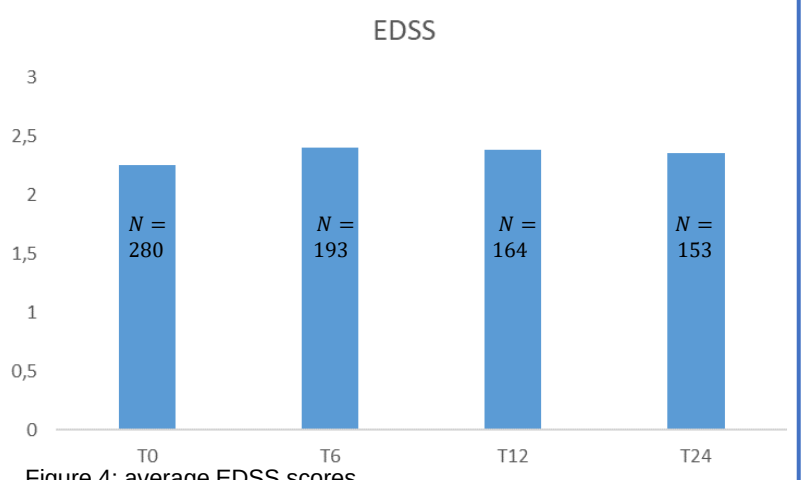

Figure 4: average EDSS scores.

Conclusion

This longitudinal analysis indicates that escalation therapy is able to stabilize or improve disease course even in advanced stages of MS. Specifically, this data suggests that switching to more effective drugs through escalation therapy may be associated with acceptable (a relative) stability in the clinical activity of MS (relapses) and disability progression (EDSS), and also in cognitive and psycho-behavioral factors (especially cognitive processing speed, fatigue and depression).

References

[1]James F. Sumowski, Ralph Benedict, Christian Enzinger, Massimo Filippi, Jeroen J. Geurts, Paivi Hamalainen, Hanneke Hulst, Matilde Inglese, Victoria M. Leavitt, Maria A. Rocca, Eija M. Rosti-Otajarvi, Stephen Rao, Neurology (2018), 90 (6)

[2]Thor A. Chalmer, Tomas Kalincik, Bjarne Laursen, Per Soelberg Sorensen, Melinda Magyari & Members of Danish Multiple Sclerosis Group, Journal of Neurology (2019), 226

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